

Wastewater Treatment Plant Permitting



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Federal Regulations for Wastewater Treatment

1. Water Pollution Control Act (1972)
2. Clean Water Act (CWA) of 1977
3. 40 CFR 122
 - Established the NPDES Permit
 - License to discharge
 - Sets penalties for violations
 - States administer NPDES Permitting with approval and oversight from EPA. (Washington's program approved November 1973)
 - Pollutants
 - Conventional: Biological oxygen demand (BOD), total suspended solids (TSS), oils and greases, fecal coliform, and pH
 - Toxics: 126 priority pollutants (i.e. metals)

State Regulations for Wastewater Treatment

- Revised Code of Washington (RCW)
 - RCW 43.21 - Ecology and Environmental Policy
 - RCW 90.48 - Water Pollution Control
- Washington Administrative Code (WAC)
 - WAC 173-200 - Groundwater
 - WAC 173-201A - Water quality Standards
 - WAC 173-216 - State Waste Discharge Permits
 - WAC 173-220 - NPDES Permits
 - WAC 173-221 - Discharge Standards for Domestic Wastewater Facilities
 - WAC 173-240 - Plans for Construction of Wastewater Facilities
 - WAC 173-270 - Highway runoff

Available at <http://slc.leg.wa.gov/default.htm> or the local library

Types of Permits

NPDES Permits:

- Discharge to surface water
- Consistent for each type of plant for the same class of receiving water (water quality standards)
- Effluent measured 3 times per week

State Waste Discharge Permits:

- Discharge to ground
- Monitor influent, effluent, ground water, soils, and crops

Permit Requirements

- Wasteload allocations (WLA) for bacteria in the Colville River
 - Colville River Watershed Bacteria Total Maximum Daily Load, May 2003 (page 15)
 - WLA for point sources
 - Based on computer model
 - Expressed as a load per day
 - Load = flow x maximum concentration (or limit)
 - Have a safety factor built in
- Effluent measured 3 times per week for fecal coliform
 - Grab sample taken after disinfection
 - Some plants certified to do analysis at the plant
- Towns must look at plant capacity
 - Influent flows or loading reach 80% of design level for 3 months then must look at expansion

Permit Requirements

Winter:

- Both plants will have the same limits as in previous permit

Summer:

- Limits will be half that allowed in the old permit
- The new plants will remove about 95% of the bacteria.

Permit Schedule:

- Chewelah: effective December 1, 2000, expires October 18, 2005.
- Colville: effective date August 1, 2001, expires June 30, 2006

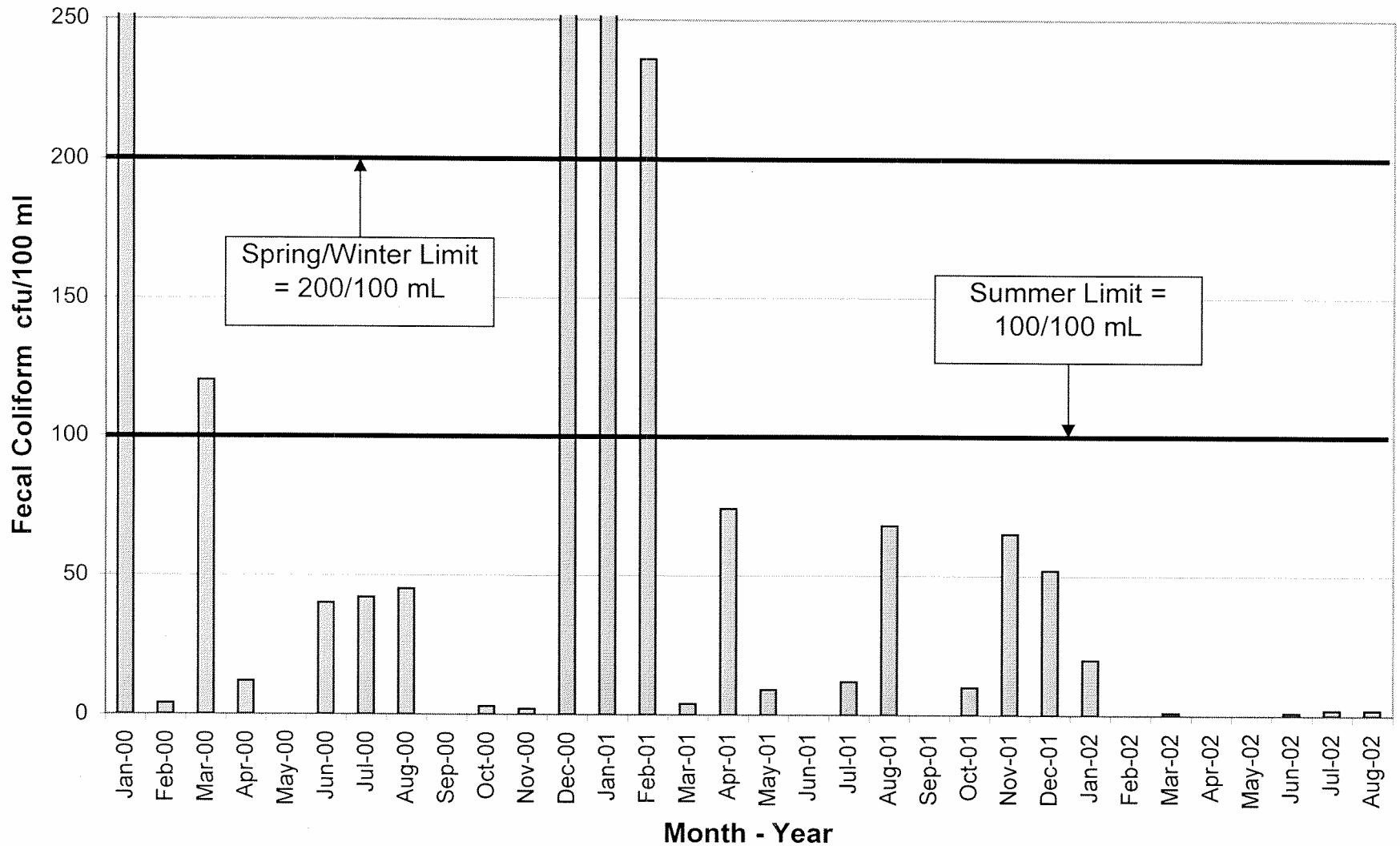
Other Information

- Lagoons
 - Stop leaking when emptied
 - New lagoons must
 - be double lined
 - have leak detection or groundwater monitoring
- Storm water
 - kept separate from domestic sewage lines
 - prevents overloading systems
 - If overloaded there is potential for violations and releases of pollutants.

Chewelah WWTP

- Reasons for new plant:
 - Lower toxics in effluent (ammonia, chlorine)
 - Lower fecal coliform
 - Lower pollutants that effected dissolved oxygen levels in the Colville River (ammonia, BOD, TSS)
 - Increase plant capacity
- New plant operating as of December, 2001
 - Operating at about 60% capacity
 - Design population = 3300, current population = 2250
 - Fecal coliform down by 70-80%, averaging < 5 cfu, down from 30-40 cfu. Effluent fecal levels are consistent now.
 - TSS down by > 75%
 - BOD down by > 50%
 - Ammonia down by > 90%
 - Chlorine substantially eliminated by switch to UV disinfection
 - Can divert effluent to lagoon during low flow

Chewelah Wastewater Treatment Plant
Fecal Coliform #CFU/100 ml
Jan 2000 to Aug 2002



Chewelah Discharge Limits

Waste load allocation [Load = flow x maximum concentration (or limit)]

- Flow = 1.64 cfs, Load = 4.03E+9
- Flow = 1.00 cfs, Load = 2.46E+9
- Flow = 0.73 cfs, Load = 1.79E+9
- Flow = 0.43 cfs, Load = 1.06E+9

Winter & Spring Limits (November - March/May)

- Fecal - Monthly Ave = 200 cfu, Weekly Ave = 400 cfu
- Ammonia - Monthly Ave = 2.0, Weekly Ave = 4.0

Summer Limits (June - October)

- Fecals - Monthly Ave = 100 cfu, Weekly Ave = 200 cfu
- Ammonia - Monthly Ave = 1.0 mg/L, Weekly Ave = 2.0
- Effluent flows dependent on Colville River flow:

Effluent Flow to River^e

7-day average flow @ Chewelah

Outfall

>26.7 CFS

< 26.7 CFS

< 15.2 CFS

< 10.8 CFS

Maximum Daily^d Effluent

Flow (MGD)

1.06

0.65

0.47

0.28

Colville WWTP

- Current lagoon system built in 1968.
- 1995 Order (enforcement action)
 - monthly flows exceeding design flows
 - violations of the permit limits
- New plant will be same as Chewelah's plant
 - extended aeration/activated sludge
 - use of the lagoons for storage
- Started upgrade in 2002
- Complete plant portion by 2006
- Final lagoon changes by 2007

Colville Discharge Limits

Waste load allocation - (Colville River Watershed Bacteria TMDL, May, 2003)

- Existing Flow = 1.86 cfs, Existing Load = 9.15E+9
- Allocated Flow = 1.86 cfs, Load = 4.58E+9

Winter & Spring Limits (November - May)

- Fecal - Monthly Ave = 200 cfu, Weekly Ave = 400 cfu
- Ammonia - Monthly Ave = 2.0, Weekly Ave = 4.0

Summer Limits (June - October)

- Fecals - Monthly Ave = 100 cfu, Weekly Ave = 200 cfu
- Ammonia - Monthly Ave = 1.0 mg/L, Weekly Ave = 2.0
- Effluent flows dependent on Colville River flow:

Effluent Flow to River^e

7-day average flow @ Kettle Falls	Maximum Daily ^d Effluent Flow (MGD)
>70 CFS	2.42
55-70 CFS	1.74
45-55 CFS	1.33
30-45 CFS	1.00
< 30 CFS	0.83